

AMENDMENT TO THE CLAIMS

1. (currently amended) A method of decoding data comprising:
  - receiving a signal comprising a plurality of bit patterns at a bank of equalizers, each equalizer in the bank of equalizers ~~each~~ tuned to a different bit pattern with a corresponding equalization target;
  - generating pattern dependent outputs from the equalizers; and
  - calculating an estimated bit sequence with a detector using the pattern dependent outputs.
2. (original) The method of claim 1 wherein the signal is received from a recording channel.
3. (original) The method of claim 1 wherein the step of receiving comprises:
  - reading a sequence of signal samples from a channel; and
  - passing segments of the sequence of signal samples to the bank of equalizers one segment at a time.
4. (previously presented) The method of claim 1 wherein the step of calculating comprises:
  - calculating a path metric for every possible state transition sequence of a bit pattern using the pattern dependent equalizer outputs according to transition information; and
  - selecting a bit sequence corresponding to a path having the smallest accumulated path metric.
5. (original) The method of claim 1 wherein each equalizer includes a pattern-dependent filter.
6. (original) The method of claim 1 wherein each equalizer includes an adaptive algorithm for tuning each equalizer to a bit pattern during use.

7. (previously presented) A method of decoding data comprising:

- processing a segment of a received signal in a bank of equalizers, each equalizer tuned to a different bit pattern and an equalization target to produce an equalized output for each equalizer; and
- detecting a bit sequence using a branch metric calculation to process the equalized output.

8. (original) The method of claim 7 wherein the step of processing comprises:

- dividing the segment of the received signal into finite overlapped segments, and
- calculating an equalized output for each of the finite segments with the bank of equalizers.

9. (original) The method of claim 7 wherein the equalized output is used in sequence detection according to the bit pattern associated with the equalizer.

10. (original) The method of claim 7 wherein a number of equalizers in the bank of equalizers is determined by a maximum number of possible states for a selected pattern window.

11. (original) The method of claim 7 wherein before the step of processing, the method further comprising:

- tuning each equalizer in the bank of equalizers to a bit pattern.

12. (original) The method of claim 11, wherein the step of tuning comprises:

- selecting an equalizer from the equalizer bank;
- sending known data to the selected equalizer to calculate a target output signal;
- calculating a difference between an output signal from the selected equalizer and the target output signal; and

tuning the selected equalizer to minimize the difference.

13. (original) The method of claim 7 wherein the branch metric calculation is a square of a difference between a received signal sample and a desired target signal determined by a state transition.

14. (original) The method of claim 7 wherein the equalization target is pattern-dependent.

15. (original) The method of claim 7 wherein the branch metric calculation is based on a noise whitening principle when noise in the received signal is correlated.

16. (original) The method of claim 7 wherein the branch metric calculation is based on a covariance matrix of noise when noise in the received signal is correlated.

17-29. (cancelled)

30. (new) The method of claim 1 wherein generating pattern dependent outputs includes reducing total noise in the pattern dependent outputs prior to the step of calculating.